Testing the Future… Today

WELCOME TO EDWARDS AIR FORCE BAS

Air Force Flight Test Center's "Mission Statement"

We conduct and support the research, development, test and evaluation of aerospace systems from concept to combat!

A2249

INDUSTRY DAY AGENDA

AFFTC

- Welcome Remarks, 95 ABW/CV, Lt Col David Bek
- Design-Build Process, Lt Col David Bek, HQ AFMC
- Remarks by Mr. James Judkins, Base Civil Engineer
- Mission Overview by LTC Frank Effrece, Commander, Operations Support Squadron

AGENDA cont'd

AFFTC

- Introduction of Key Government Project Personnel, Mr. Ken Crawford
- Project Presentation by the U.S. Army Corps of Engineers, RFP Development
  - Omaha District
  - Los Angeles District Contracting Office
- Potential Challenges, Mr. John Stephens, Chief Engineering Division, BCE
- Project Questions

AGENDA cont'd

AFFTC

- 0900 - 1130 Project Overview Briefing
- 1130 - 1315 Lunch
- 1315 - 1600 Questions and Answers Session
- Closing Remarks, Mr. Ken Crawford

INDUSTRY DAY AGENDA

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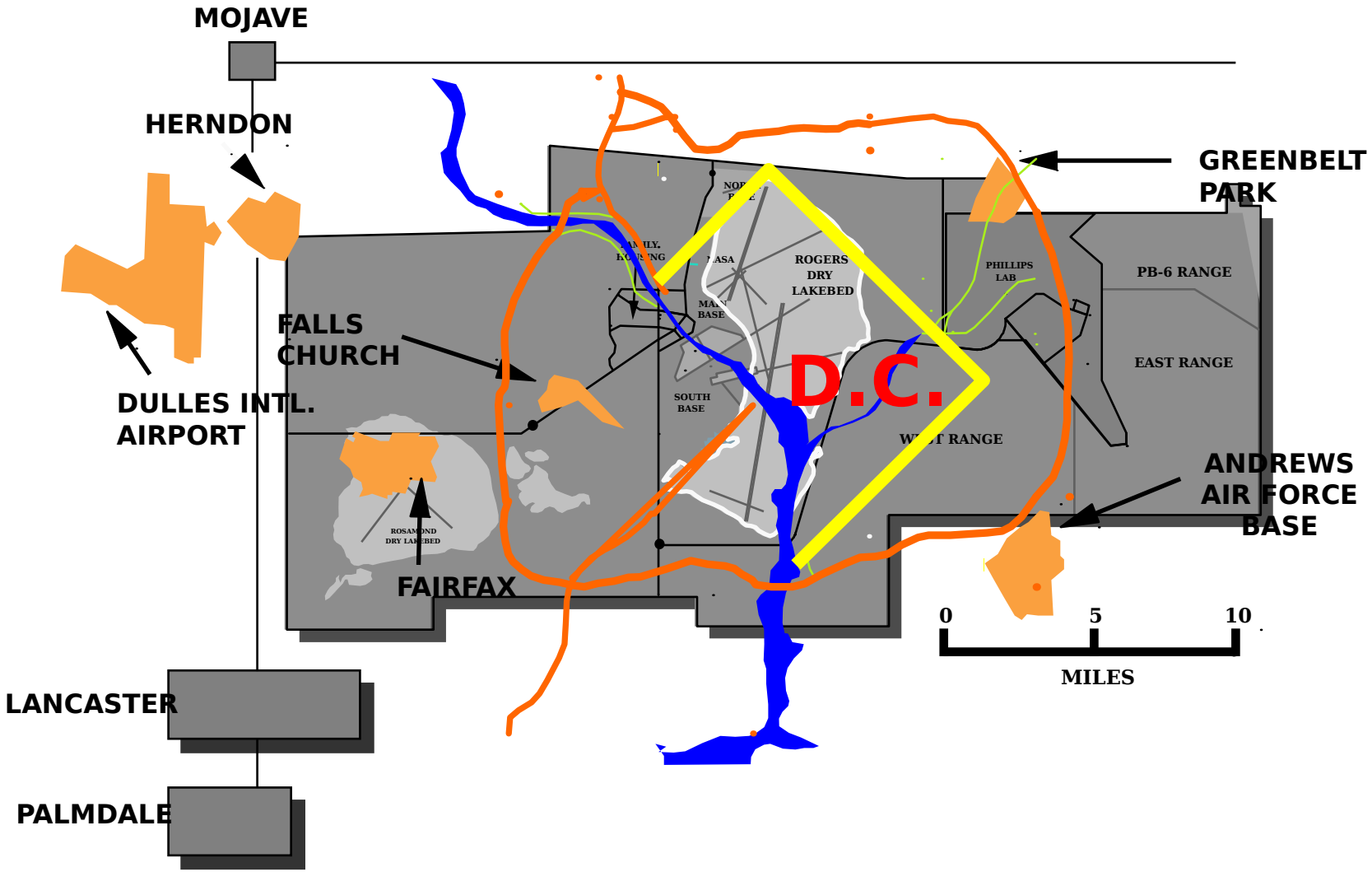
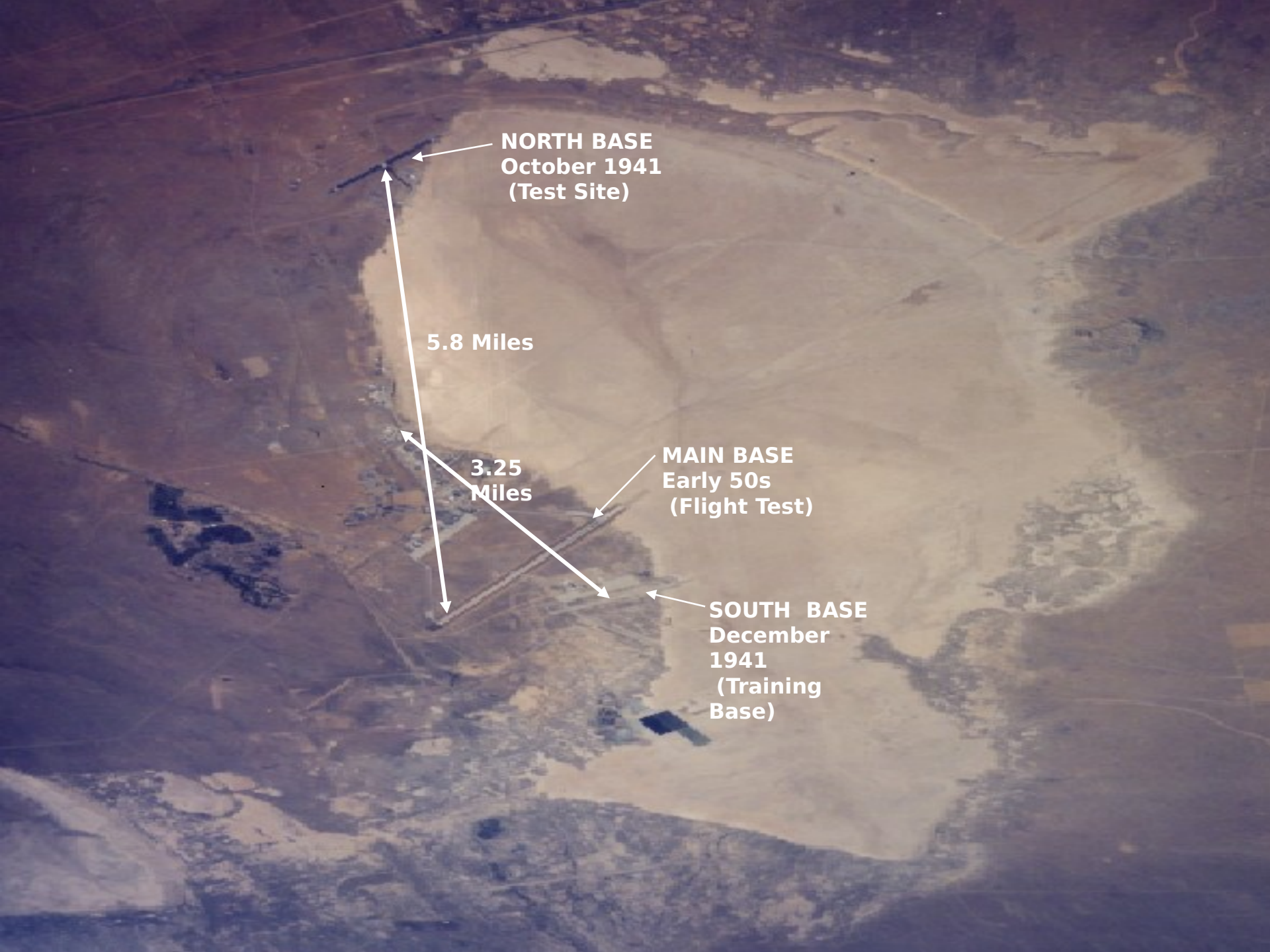
Edwards AFB

AFFTC



Edwards AFB

AFFTC


NORTH BASE
October 1941
(Test Site)
5.8 Miles
3.25
Miles
MAIN BASE
Early 50s
(Flight Test)
SOUTH BASE
December
1941
(Training
Base)

Main Base Runway

AFFTC

The Challenge

AFFTC

- **Main Base Runway Requires Replacement**
- **Major Repairs Require Runway Closure**
- **Mission Requirements Prohibit Airfield Closure**

What's Important To The USAF

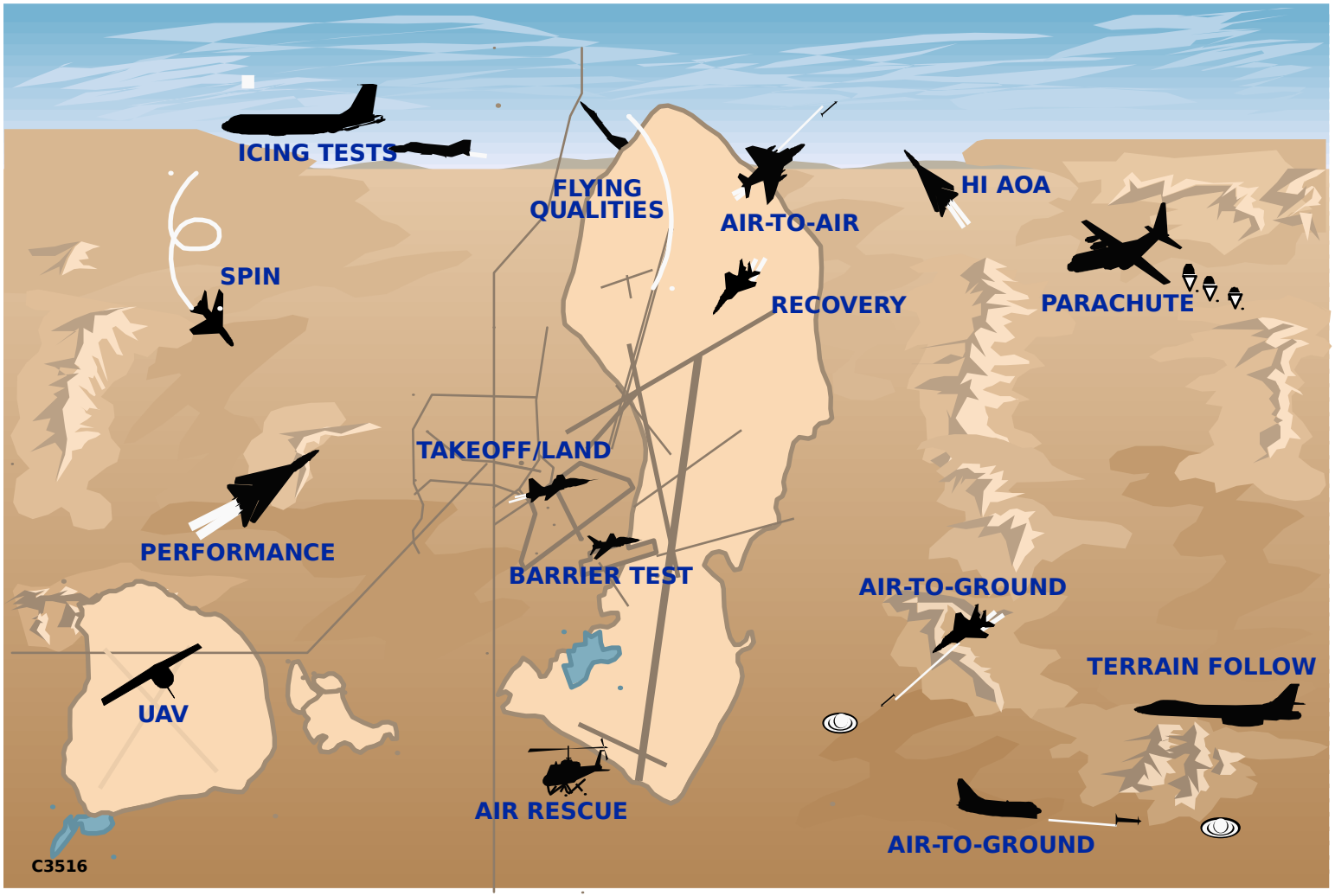
AFFTC

- Fixing The ASR Problem
- Budget Is Important
- Schedule Is Important
- Environmental Considerations Are Important
- Living Up To Our Word Is Important

Air Force Flight Test Center (AFFTC)

Mission Overview

- **AFFTC… A World Leader In Aircraft Testing And Evaluation!**



Airfield Requirements

AFFTC

- Programmed Weapons System Test Efforts
  - **F/A-22, JSF, ABL, UCAV, C-130J, CV-22**
- Test Support Operations
  - **Chase, Refueling, Targets**
- NASA Shuttle Operations
- NASA Experimental Missions
  - **B-52, ER-2**
- USAF Test Pilot School
- Operational Emergency Aircraft Recovery

Test Programs Require 300 Ft x 15,000 Ft Runway

Why 300 ft Wide Main Runway

AFFTC

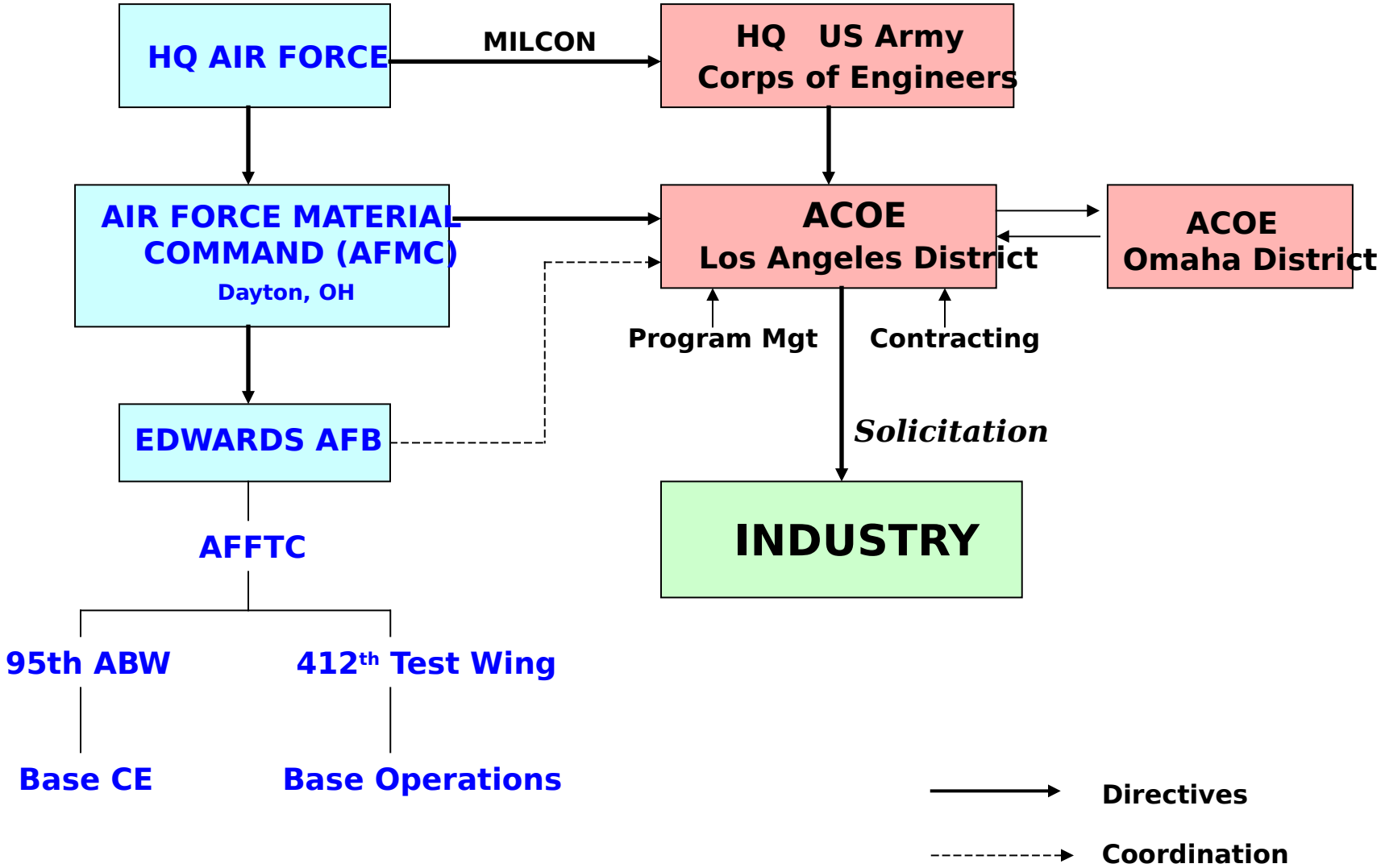
- **Risk Reduction**
  - **Unproven Control Systems**
  - **Large Aircraft Wet Runway Tests**
  - **Anti-Skid Brake Tests**
  - **Ground Minimum Control Testing (Vmcg)**
  - **Full Envelope Exploration**
- **Global Hawk / Predator / Unmanned Combat Aerial Vehicle (UCAV)**
- **B-52 Test Operations**
- **NASA B-52 And ER-2**
- **Available For Commercial Aircraft Testing Programs**

EDWARDS AFB - RUNWAY PROJECT TEAM

ONE PROJECT – ONE TEAM

Key Air Force and Army Corps of Engineers Players

AFFTC



U.S. ARMY CORPS OF ENGINEERS

"Warriors Committed to Readiness and Quality Supp

US Army Corps of Engineers

Edwards AFB Design Industry Day

10 Mar 05

U.S. AIR FORCE

Integrity - Service - Excellence

MAIN BASE RUNWAY REPLACEMENT

EDWARDS AFB, CA

US Army Corps of Engineers

INDUSTRY DAY PURPOSE:

TO PROVIDE INFORMATION GENERATING INTEREST, AND TO
RECEIVE FEEDBACK FROM POTENTIAL BIDDERS.

QUESTIONS/ANSWERS SESSION

PLEASE PROVIDE YOUR QUESTIONS/SUGGESTIONS IN WRITING USING CARDS PROVIDED

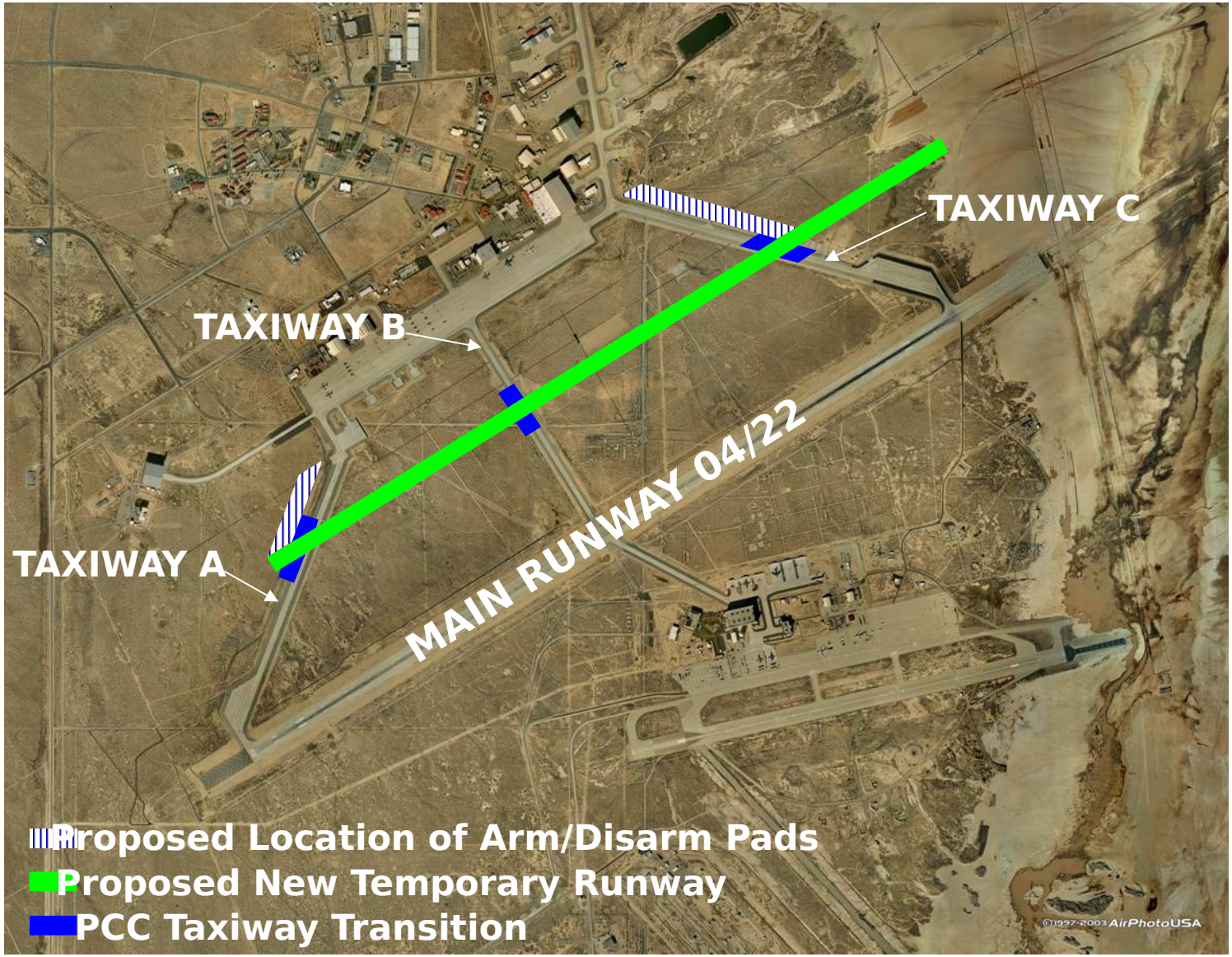
ALL QUESTIONS WILL BE VERBALLY ANSWERED AFTER THE FORMAL BRIEFING (AFTER LUNCH)

EXISTING SITE PLAN

US Army Corps of Engineers®

PROPOSED NEW TEMPORARY RUNWAY

US Army Corps of Engineers®



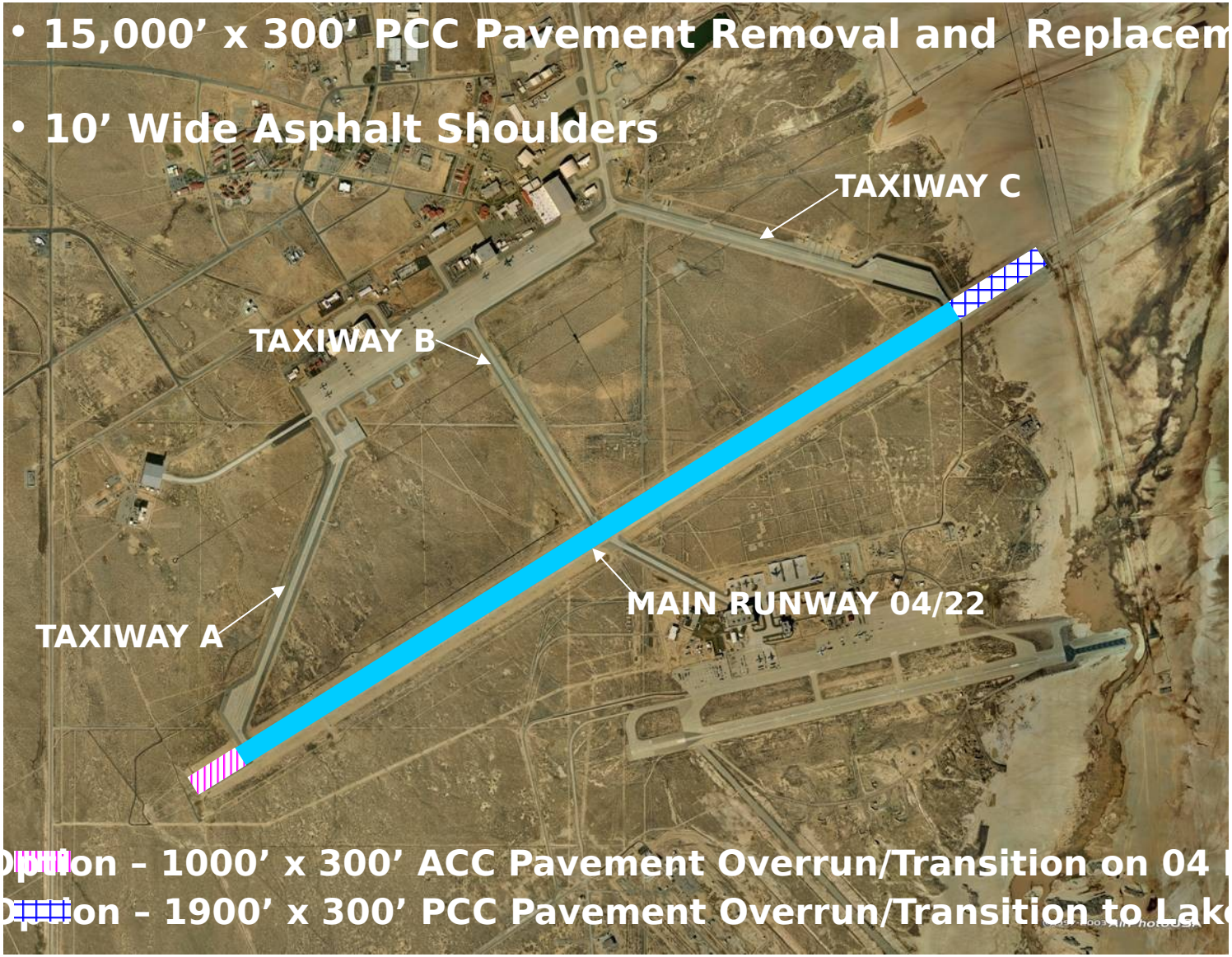
PROPOSED NEW TEMPORARY RUNWAY

US Army Corps of Engineers®

- **Temporary Asphalt Runway 200’ x 12000’**
- **2500’ Separation from Main Runway Centerline**
- **10’ Asphalt Shoulders**
- **1000’ Asphalt Overruns, Each End**
- **Demolition/Relocation of Power Check Pads 21 to 24**
- **Construct PCC Arm/Disarm Pads Taxiway A & C**
- **Access Lake Bed Runway**

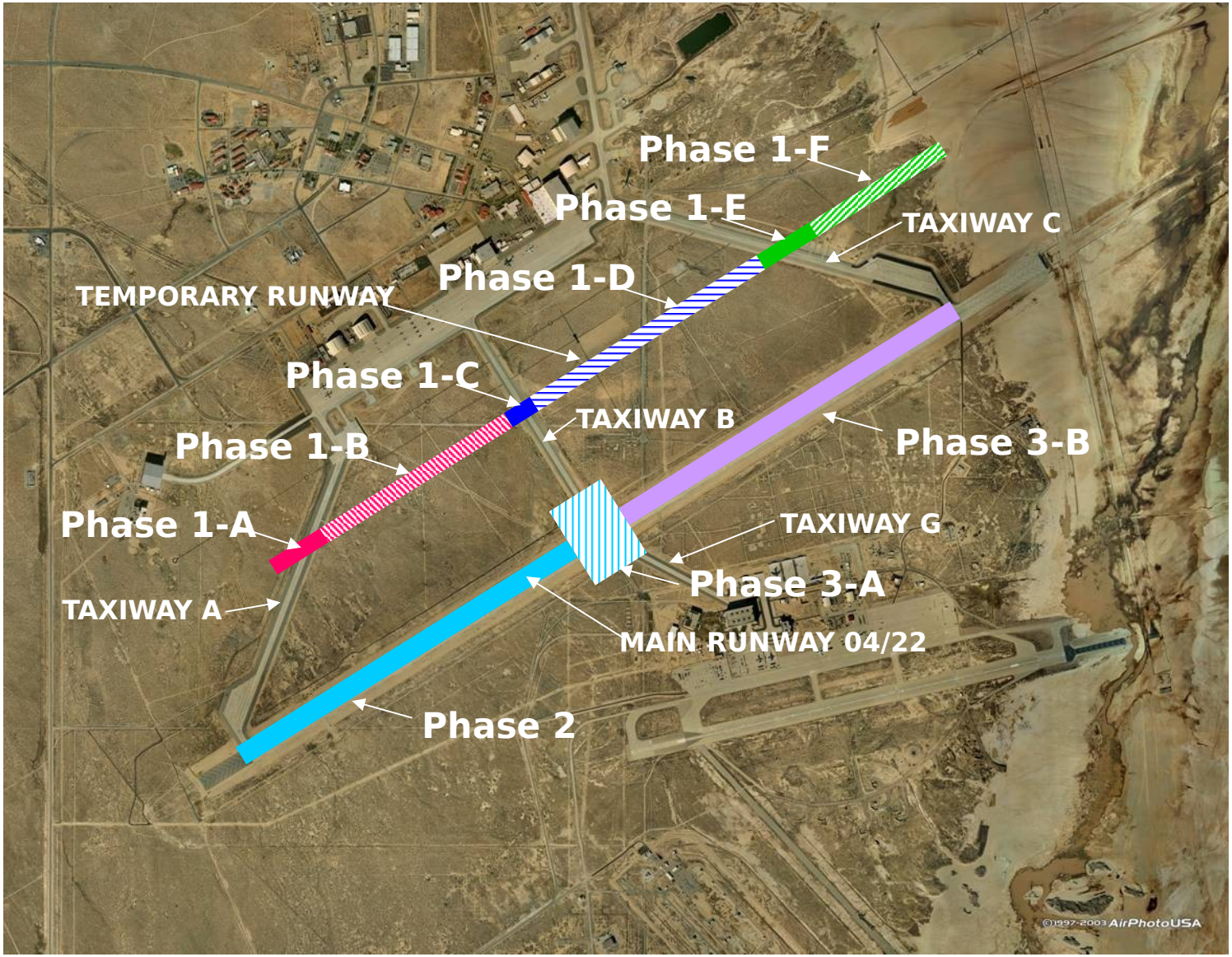
EXISTING PCC RUNWAY

US Army Corps of Engineers


• 15,000’ x 300’ PCC Pavement Removal and Replacem
• 10’ Wide Asphalt Shoulders
TAXIWAY C
TAXIWAY B
TAXIWAY A
MAIN RUNWAY 04/22
ption – 1000’ x 300’ ACC Pavement Overrun/Transition on 04
ption – 1900’ x 300’ PCC Pavement Overrun/Transition to Lak

PHASING PLAN

US Army Corps of Engineers®



PHASING PLAN

US Army Corps of Engineers

- **Project Incrementally Funded Over Three Fiscal Years Beginning FY 06**
- **Phase 1 (FY 06) – Design/Construct**
  - **Construct new temporary asphalt runway with associated taxiway transitions**
- **Phase 2 (FY 07) – Construct**
  - **Construct first portion of existing PCC runway**
- **Phase 3 (FY 08) – Construct**
  - **Construct remainder of existing PCC runway**

STAGING/BATCH PLANT AREAS

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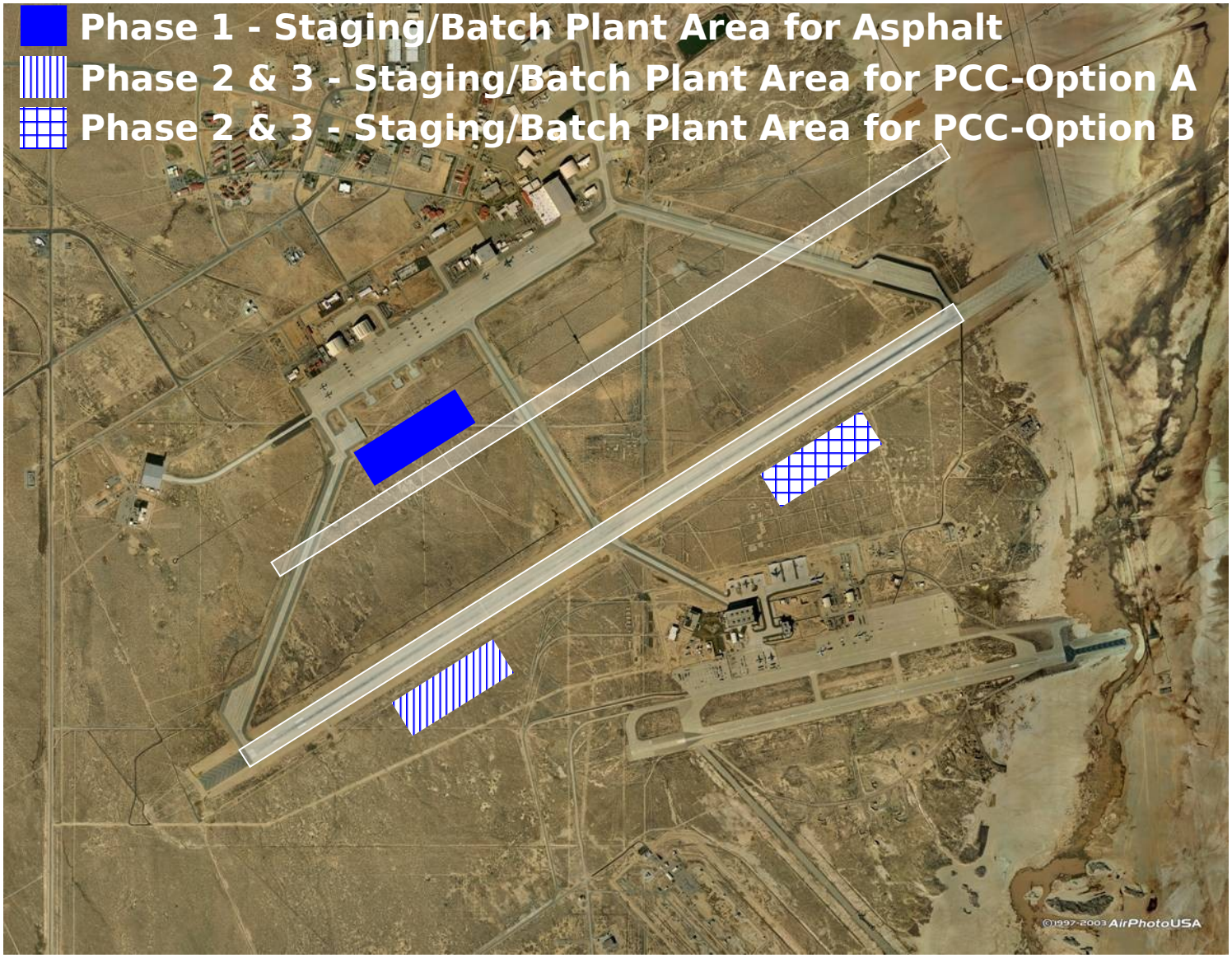
Phase 1 - Staging/Batch Plant Area for Asphalt
Phase 2 & 3 - Staging/Batch Plant Area for PCC-Option A
Phase 2 & 3 - Staging/Batch Plant Area for PCC-Option B
©1997-2003 AirPhotoUSA

CONTRACTOR'S ACCESS ROAD & PHASE 1 PLAN

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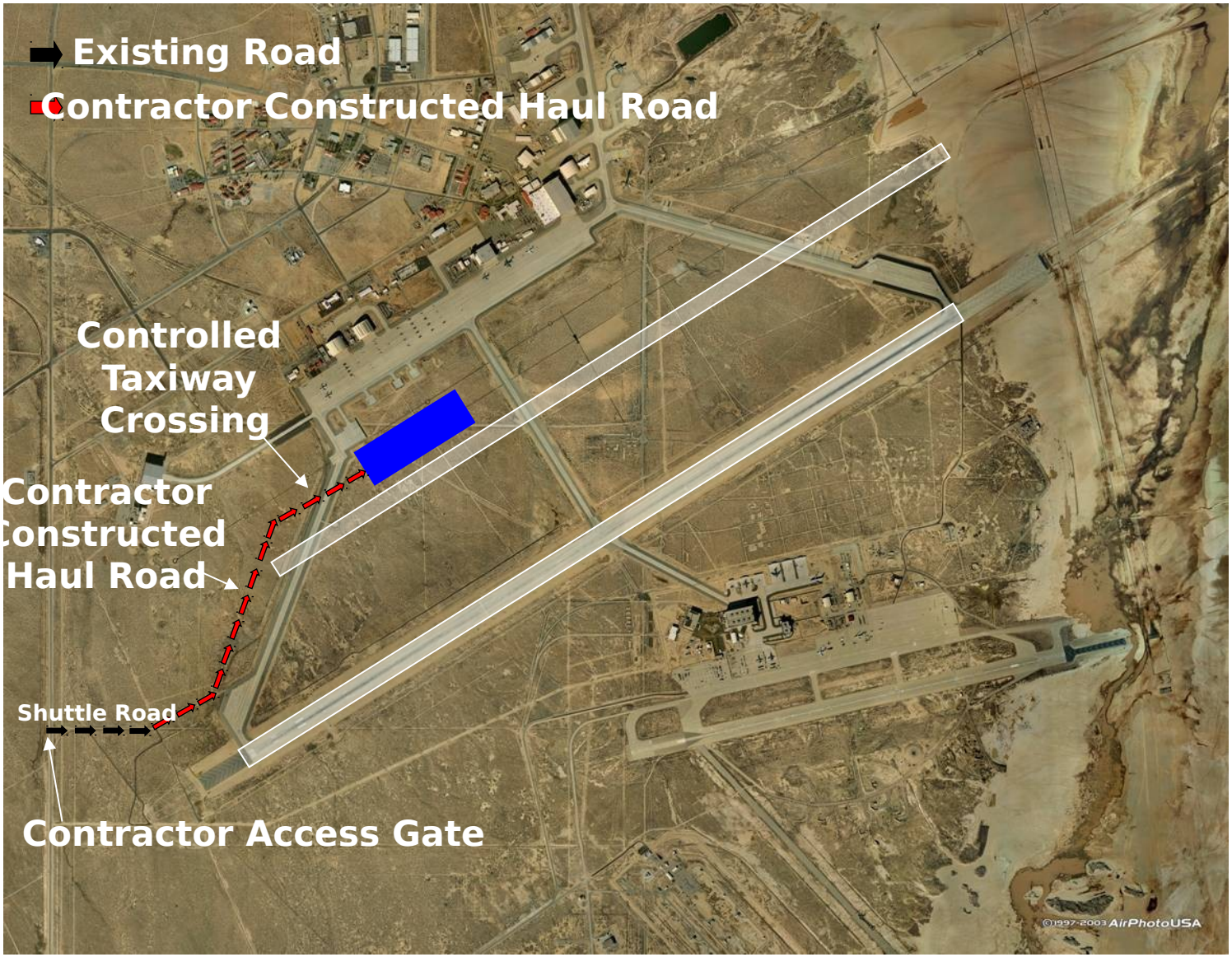
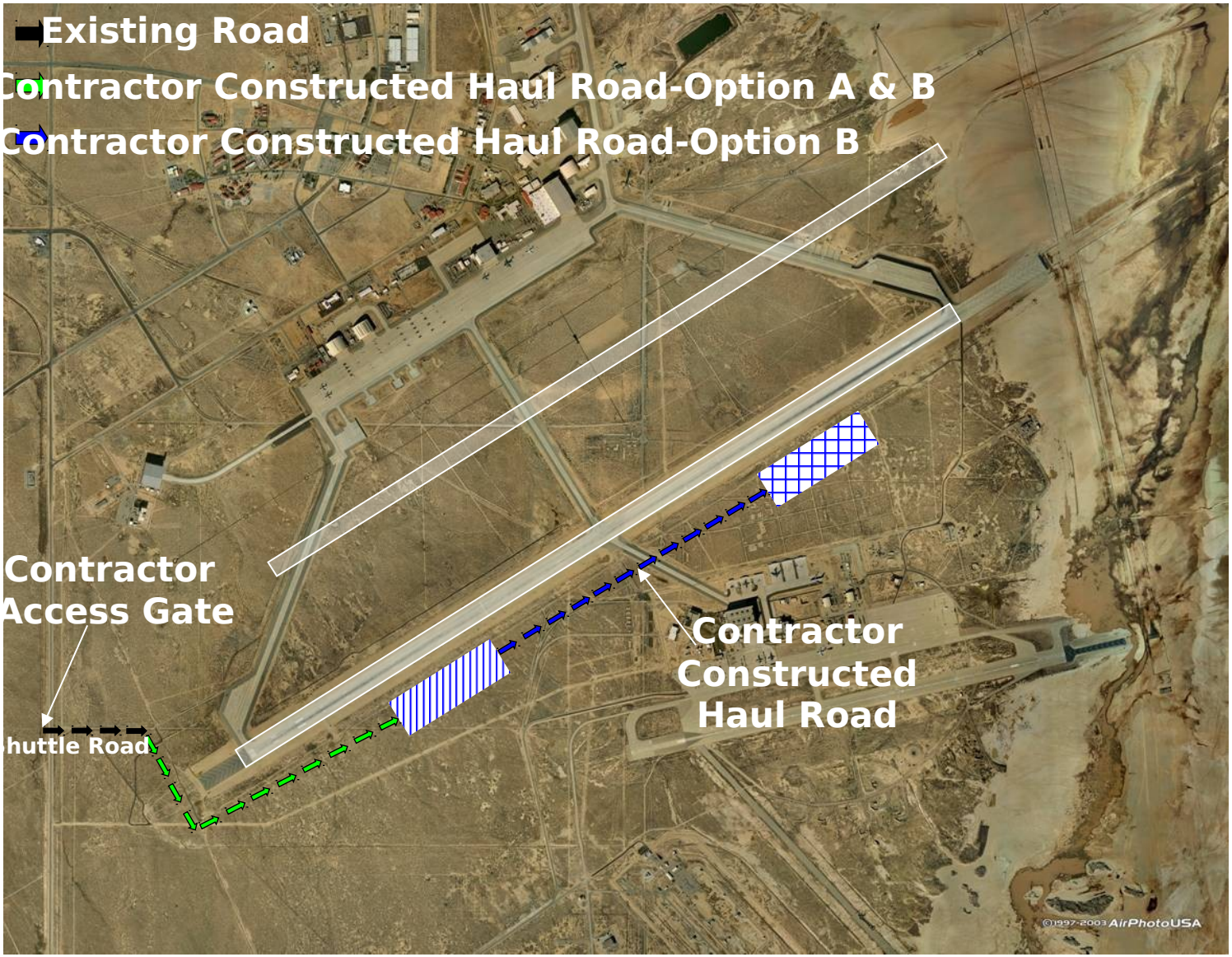


CONTRACTOR'S ACCESS ROAD & PHASE 2 & 3 C-ATE

US Army Corps of Engineers®



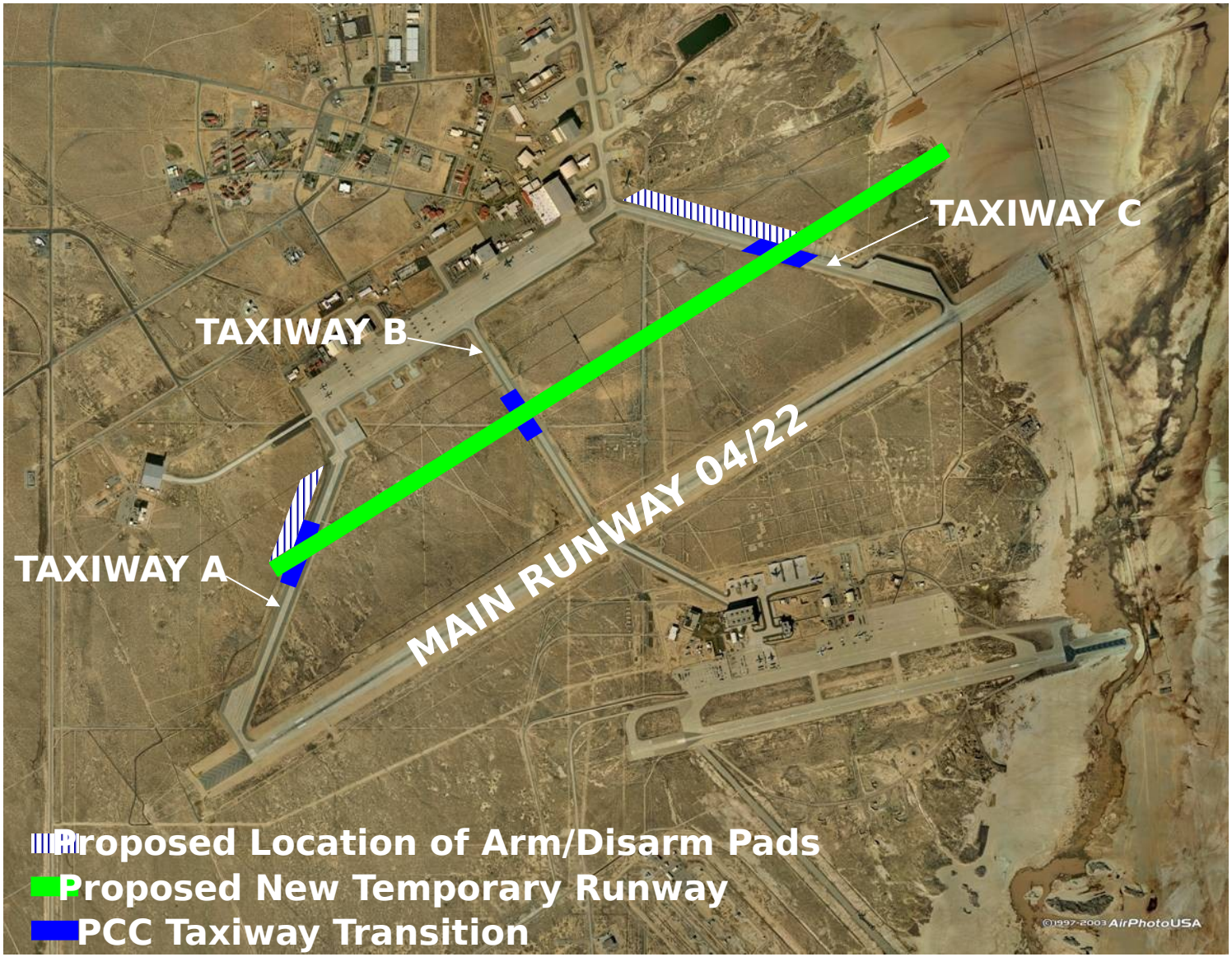
ELECTRICAL WORK
NEW TEMPORARY RUNWAY

US Army Corps of Engineers

- Runway edge lights for temporary runway
- Threshold lights for temporary runway
- Truncating existing taxiways A, B, & C edge lights to extend only to the temporary runway
- Placement of arresting gear
- Removal of electrical panels located at the loading pads on the 22 end of the runway.
- Provide power feed to last chance building after removal of electrical panels at the loading pads
- New PAPI
- New direction signs

PROPOSED NEW TEMPORARY RUNWAY

US Army Corps of Engineers®



ELECTRICAL WORK
REPLACE EXISTING RUNWAY

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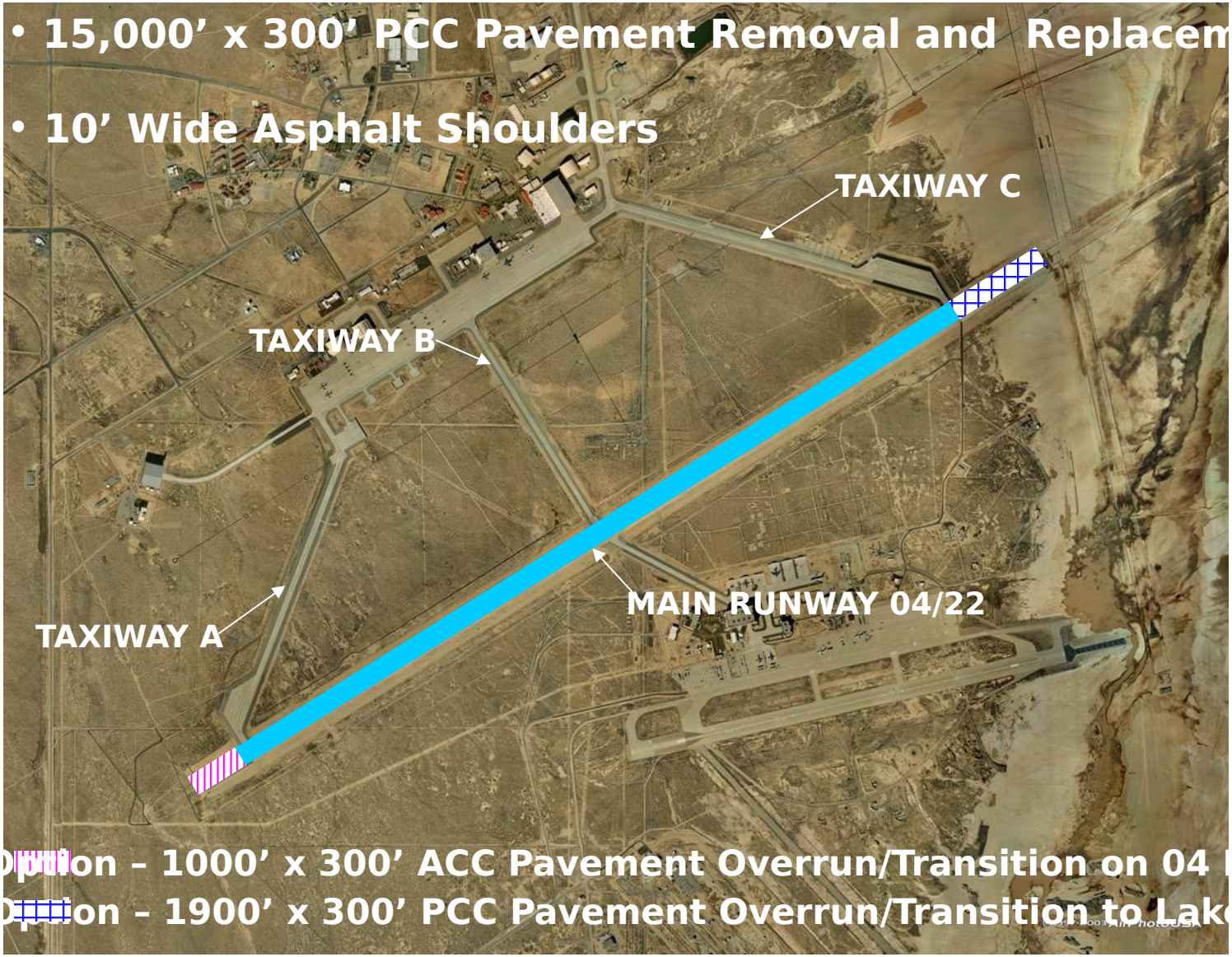
- Existing edge lights will remain
- Existing threshold lights will remain
- The ILS & PAPI will remain
- Existing direction signs will remain
- NASA cable runs along the existing runway cannot be cut or disturbed
- Coordinate with Edison Power to possibly move electrical lines along Lancaster Blvd

EXISTING PCC RUNWAY

US Army Corps of Engineers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TOPOGRAPHIC SURVEY PLAN

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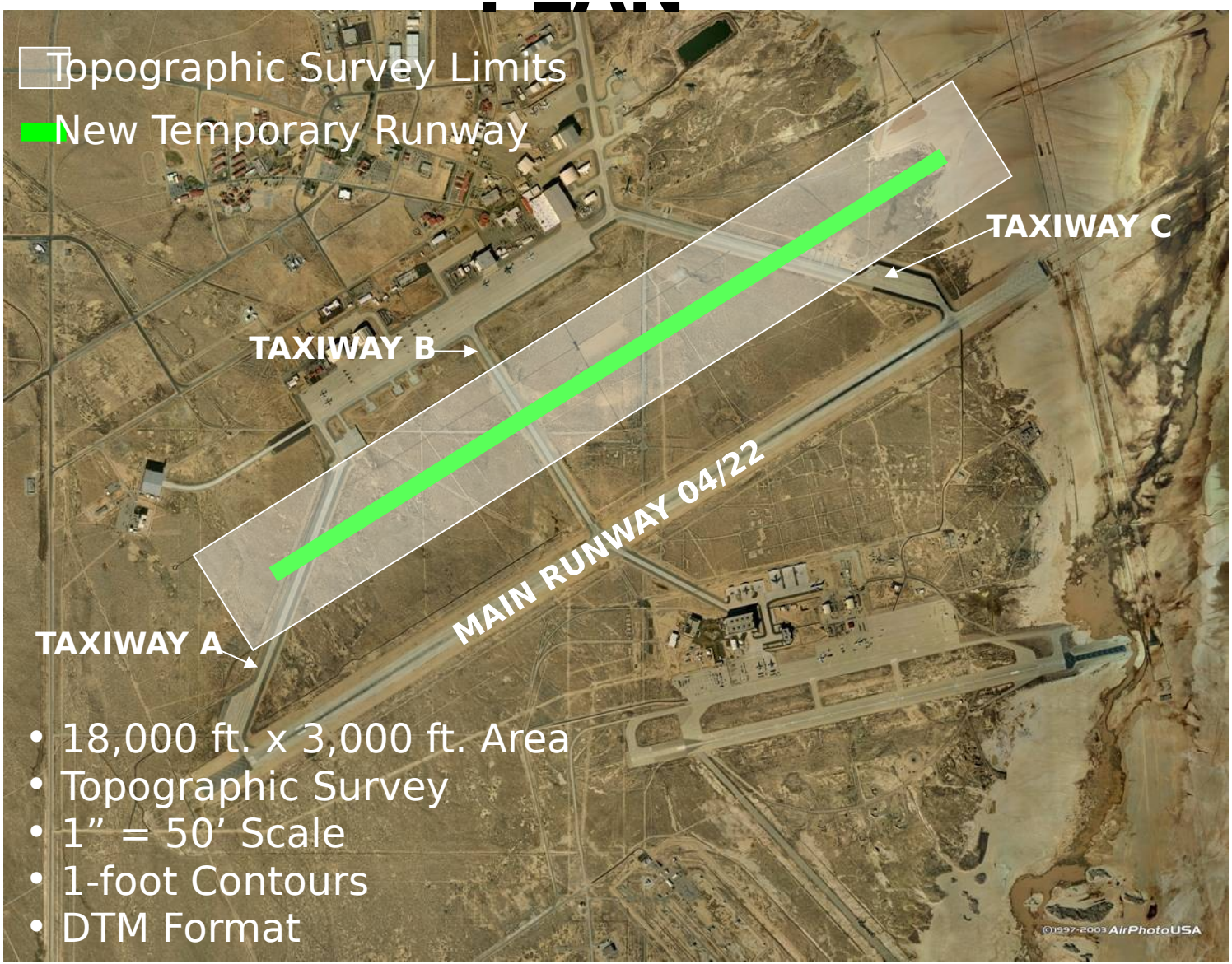

PROPOSED GEOTECHNICAL PLAN

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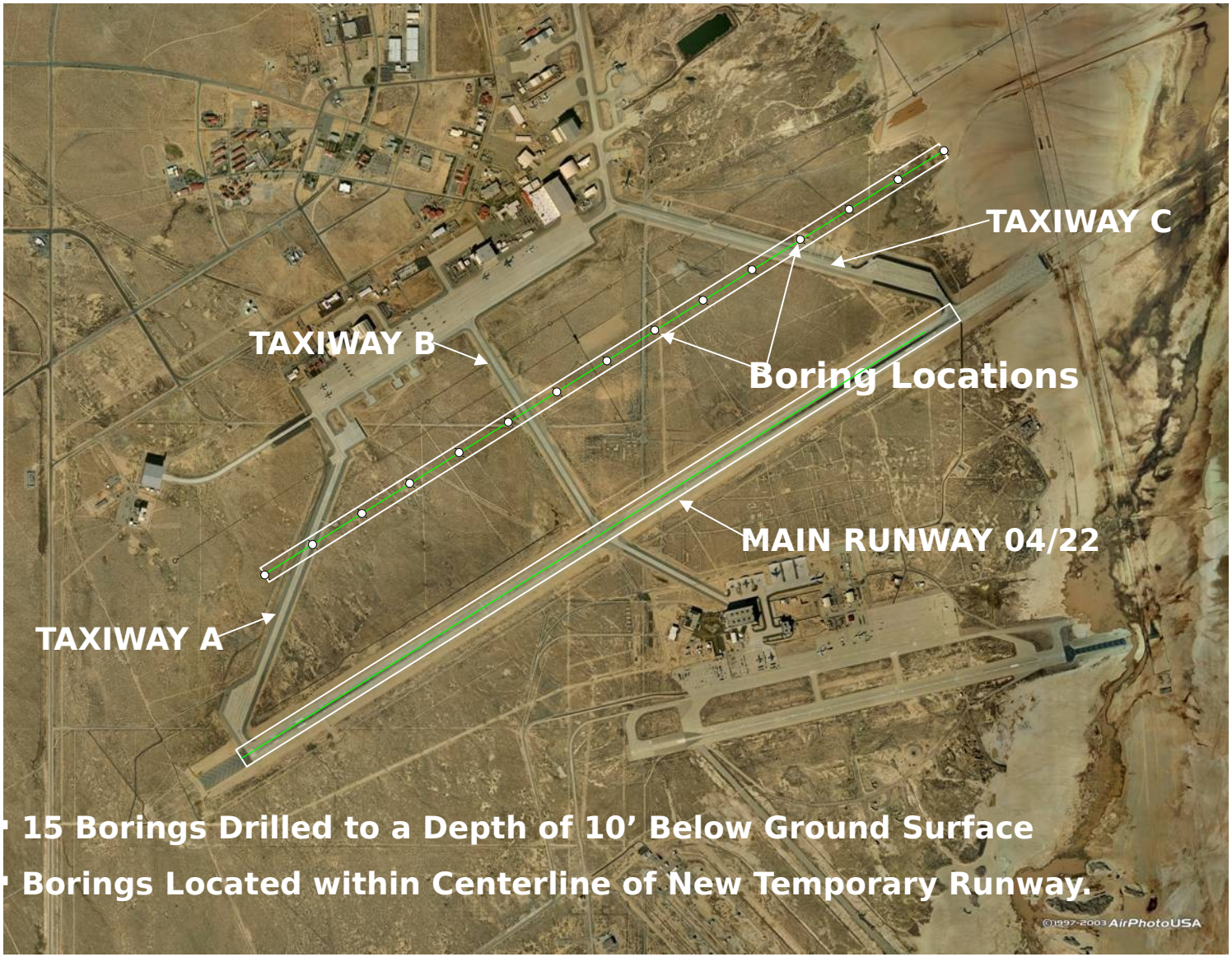

- 15 Borings Drilled to a Depth of 10’ Below Ground Surface
- Borings Located within Centerline of New Temporary Runway.

DESIGN CRITERIA DOCUMENTS

US Army Corps of Engineers®

- **Pavement Design**
  - UFC 3-250-03 Standard Practice Manual for Flexible Pavements
  - UFC 3-250-04 Standard Practice for Concrete Pavements
  - UFC 3-260-01 Airfield and Heliport Planning and Design
  - UFC 3-260-02 Pavement Design for Airfields
  - PCASE Pavement Design & Evaluation Software www.pcase.com
- **Surface & Subsurface Drainage Design**
  - AFM 88-5, CH3, Drainage and Erosion Control Structures for Airfields and Heliports
  - AFM 88-5, CH1, Surface Drainage Facilities for Airfields and Heliports
  - EI 02C202 Subsurface Drainage for Pavements
  - UFC 3-230-06A Design: Subsurface Drainage
- **Pavement Marking**
  - AFI 32-1042 Standards for Marking Airfields
  - ETL 04-2 Standard Airfield Pavement Marking Schemes
- **Airfield Lighting**
  - UFC 3-535-01 Airfield Lighting Systems

- Technical publications above available at www.hnd.usace.army.mil/techinfo

Pavement Design – Aircraft Mix

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- **Use the following Air Force Heavy Load mixed traffic in the PCASE analysis:**

Aircraft	Aircraft Wt.(lbs.)	Traffic Passes
B-52	480000	120000
C-17	580000	200000
F-15E	81000	100000

- **In addition, the following aircraft mix shall be added to the Air Force Heavy Load mixed traffic to reflect future aircraft traffic:**

Aircraft	Aircraft Wt.(lbs.)	Traffic Passes
B-747	850000	500
B-767	409000	10000
C-5A	769000	1000
KC-10	590000	5000
KC-135	310600	20000
Orbiter	81000	500

DRAWINGS REQUIRED BY CONTRACTOR'S AE

US Army Corps of Engineers

- LOCATION PLAN
- PHASING PLANS & NOTES
- GEOTECH BORING LOCATION PLAN AND BORING LOGS
- REMOVAL PLAN
- REMOVAL SECTIONS
- SITE PLAN (AIRFIELD GEOMETRICS)
- GRADING PLAN
- RUNWAY PROFILES (MAIN & TEMPORARY RUNWAY)
- GRADING SECTIONS
- SPOT ELEVATION PLAN
- JOINT PLAN
- REPLACEMENT SECTIONS
- JOINT DETAILS
- JOINT SEALANT DETAILS
- AIRFIELD PAVEMENT MARKING PLAN
- AIRFIELD PAVEMENT MARKING DETAILS
- PAVEMENT REINFORCEMENT DETAILS
- AIRFIELD LIGHTING REMOVAL PLAN
- AIRFIELD LIGHTING PLAN
- AIRFIELD LIGHTING DETAILS

SPECIFICATIONS

US Army Corps of Engineers®

- **Unified Facility Guide Specifications (UFGS)**
- **Edited Specifications shall be provided in RFP**
  - **02200 Demolition**
  - **02231 Clearing & Grubbing**
  - **02300 Earthwork**
  - **02620 Subdrainage System**
  - **02630 Storm Drainage**
  - **02704 Aggregate and/or Graded-Crushed Aggregate Base**
  - **02705 Subbase Courses**
  - **02706 Drainage Layer**
  - **02748 Bituminous Tack and Prime Coats**
  - **02749 Hot-Mix Asphalt (HMA) for Airfields**
  - **02753 Concrete Pavement for Airfields and Other Heavy-Duty Pavements More Than 10,000 Cubic Yards**
  - **02762 Compression Joint Seals for Concrete Pavements**
  - **02763 Pavement Markings**
  - **16526 Airfield and Heliport Lighting and Visual Navigation Aids**
  - **16375 Electrical Distrubution System, Underground**
- **Technical specifications above available at: http://www.ccb.org**

RFP SPECIFICATIONS

US Army Corps of Engineers®

- **Unified Facilities Guide Specifications**
- **Edited versions included in RFP, including paving materials and electrical/NAVAIDS**
- **Unedited versions available from:**

  http://www.ccb.org/docs/ufgshome/UFGSToc.htm

UFGS 02753 - PCC

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- **Major differences from FAA P-501 or DOTs**
  - **Deleterious Materials sampling and testing**
  - **Alkali-Silica Reactivity (ASR) testing**

Deleterious Materials

US Army Corps of Engineers®

Deleterious Materials Comparison

»	UFGS	ASTM
• Clay Lumps and Friable Particles	0.2	3.0 max
• Shale	0.2	NR
• Material finer than No. 200 sieve	0.5	1.0 max
• Lightweight Particles (2.0 Sp. Gr.)	0.2	0.5 max
• Clay Ironstone	0.5	NR
• Chert and Cherty Stone (<2.4 Sp. Gr.)	0.5	5.0 max
• Claystone, Mudstone, Siltstone	0.1	NR
• Shaly and Argillaceous Limestone	0.2	NR
• Other Soft Particles	1.0	NR
• Total of All Deleterious Materials	2.0	NR

- (Except materials finer than N0. 200)

Deleterious Materials

US Army Corps of Engineers®

- Requires experienced Petrographer
- Follow specific testing sequence
- Use significantly larger samples:
  - Coarse Aggregate (3/4” to 1 ½”) – 200 lbs
  - Coarse Aggregate (No. 4 to ¾”) – 25 lbs
  - Fine Aggregate – 10 lbs

Alkali-Silica Reactivity

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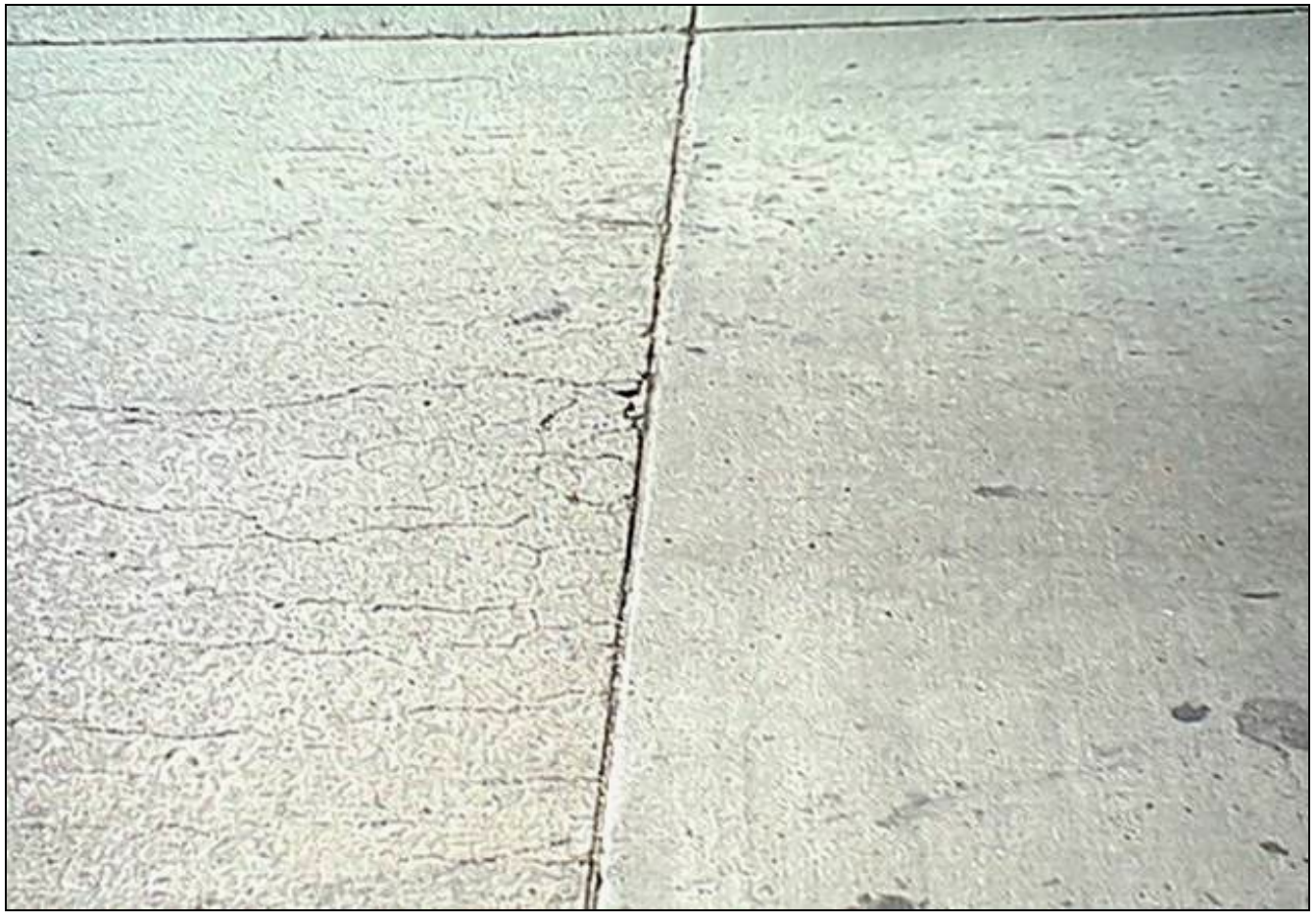

ASR Testing/Evaluation

US Army Corps of Engineers®

- ASTM C 1260 Test
- Test individual coarse and fine aggregates
- Test proposed aggregate blend
- Expansion < 0.8% at 16 days after casting
- If expansion > 0.8%, replace aggregates or mitigate with Class F flyash or GGBF slag

ASR Testing/Evaluation

US Army Corps of Engineers®

- Mitigation evaluation
- Use ASTM C 1260 “Modified” (aka C 1567)
  - Utilize project materials
  - With proposed coarse:fine aggregate blend
  - Low alkali cement
  - Class F Fly Ash (25 to 40% replacement), or
  - Grade 100 or 120 GGBF slag (40 to 50%)
- Expansion < 0.8%

MAIN BASE RUNWAY REPLACEMENT

EDWARDS AFB, CA

- **Acquisition Strategy**: Two-Phase Design Build (Best Value Trade-off) Note: Only one solicitation will be issued for both phases
  - **Phase One (Pre-selection) -** Proposal evaluation and selection based on the following criteria:
    - Specialized experience and technical competence
    - Capability to perform the work
    - Key Personnel
    - Past performance of the offeror's team (A-E and construction)
    - A minimum of 3 and a maximum of 5 contractors will proceed to Phase Two

MAIN BASE RUNWAY REPLACEMENT
EDWARDS AFB. CA

US Army Corps of Engineers

- **Phase Two –** An amendment will be issued to 3-5 contractors from Phase One and will contain the detailed design requirements. The evaluation and selection will be based on Phase Two criteria only. Phase Two criteria is as follows:
  - Design concept
  - Management approach
  - Proposed technical solution
  - Price proposal

- Best Value Trade-Off
  - Evaluated against solicitation requirements.
  - Compare advantages/disadvantages/risk analysis.
  - All evaluation factors other than cost or price when combined are approximately equal to cost or price.
  - Award to most advantageous proposal (permits tradeoffs among cost or price and non-cost factors and allows the Government to accept other than the lowest priced proposal).

MAIN BASE RUNWAY REPLACEMENT
EDWARDS AFB, CA

US Army Corps of Engineers

- Schedule
  - Issue Solicitation (Step 1) 22 Apr. 05
  - Issue Amendment (Step 2) 15 Aug. 05
  - Issue Final RFP Package 16 Aug. 05
  - Overall Award 15 Nov. 05

POTENTIAL CHALLENGES

US Army Corps of Engineers

- Use of local pits / ASR Mitigation
- Phasing for NASA Operations
- Topography for Existing R/W, Taxiway Tie-ins, and DEM
- Soils Data for Existing R/W
- Use of On Base Borrow Pits
- Concrete Recycling
- Contractor Supplied Security